DANISH ramazzini CENTRE

research in occupational and environmental medicine

Annual meeting

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AARHUS UNIVERSITY

CISBO

ASTHMA, ALLERGY & INDOOR ENVIRONMENT

Indoor dampness

Associations with allergy and respiratory health in Danish pupils

CISBO

Collaboration between :

AARHUS UNIVERSITY

National Research Centre for the Working Environment

Region of Southern Denmark
OUH Odense University Hospital

Universiteit Utrecht

Background

Definition of indoor dampness

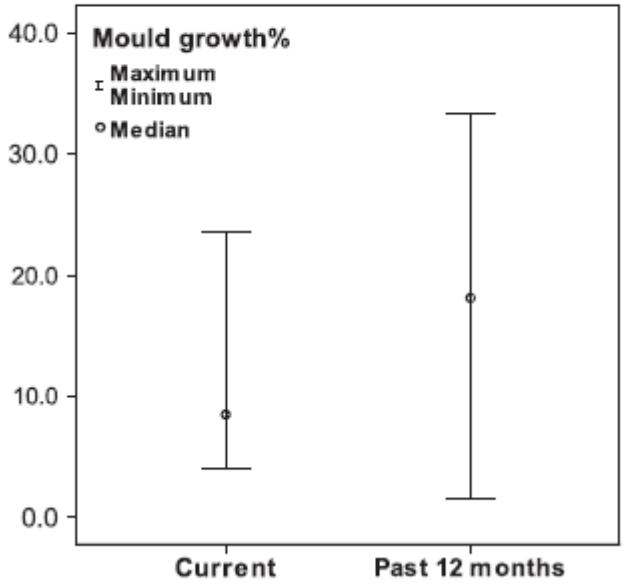
Any visible, measurable or perceived outcome of excess moisture that causes problems in buildings, such as mould, leaks or material degradation, mould odour or directly measured microbial growth or excess moisture.

Reference: the World Hospital Organization

Background

Prevalence of indoor dampness

Dampness and mold in European housing stock
Haverinen-Shaughnessy



Reference:
Journal of Exposure Science and Environmental Epidemiology (2012) 22, 461 467

Background

Dampness-related health effects

- Immunological responses
- Symptoms
- Disease

Why investigate?

Knowledge gaps

- Few school studies
- Few Danish studies

Aim

To study allergy and respiratory health effects associated with indoor dampness in homes and schools of Danish pupils

Methods

Study population

417 pupils from 1st to 2nd grade:
- **21** classrooms
- **15** schools

NON-PARTICIPANTS

87 pupils declined

Participants:
- **330** pupils
- **21** classrooms

Exposure assessment

Technical inspection

- Classroom dampness

  Low, medium or high degree

Physician administered questionnaire

- Bedroom dampness

  Yes/no question

- Other indoor environmental characteristics: Location of the dwelling, residental area, number of occupants at school/at home, pet keeping and second-hand smoking

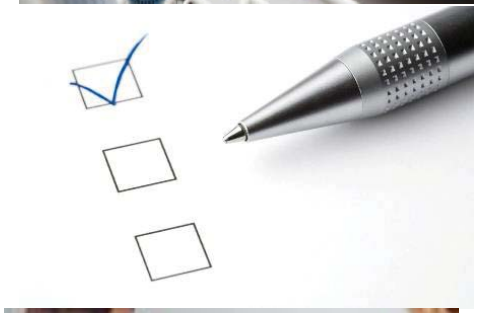
Outcome assessment

Allergy

- Skin-prick-testing
- Self-reported atopic rhinitis and dermatitis

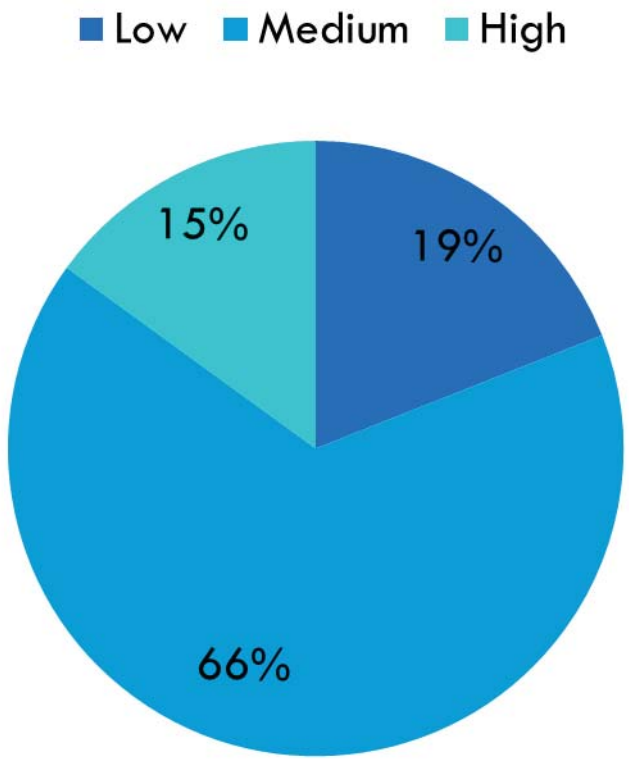
Respiratory health

- Lung function (z-scores of FEV_1, FVC and FEV_1/FVC)
- Self-reported respiratory symptoms
- Self-reported doctor-diagnosed asthma



Results

Classroom dampness



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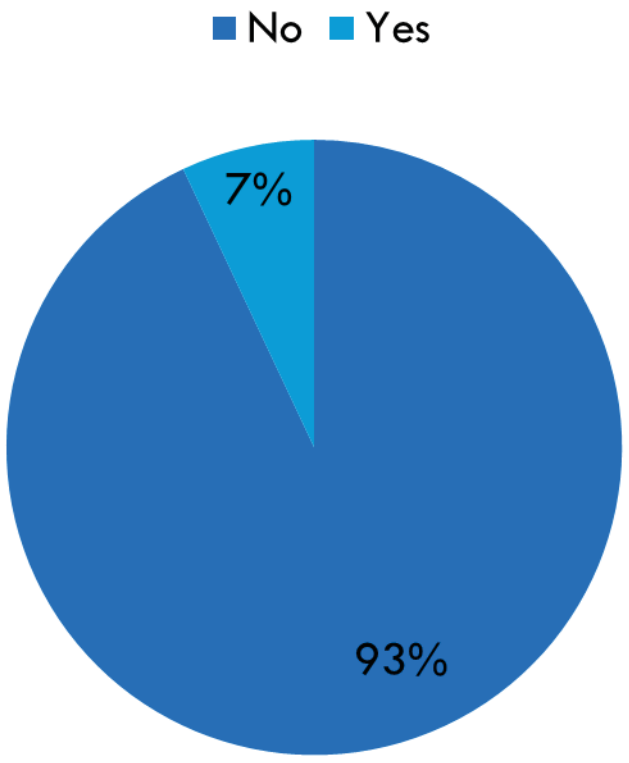
Bedroom dampness



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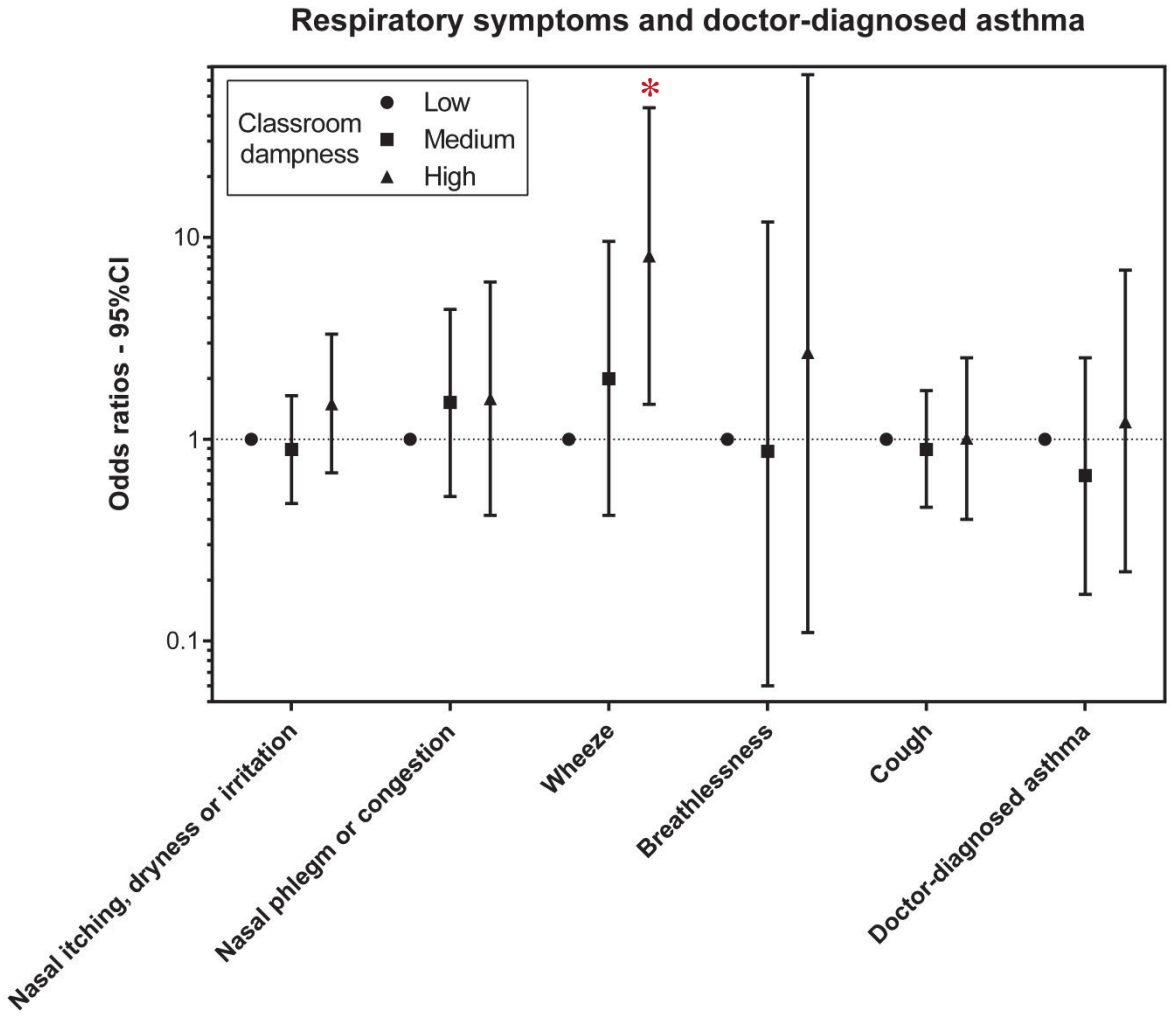
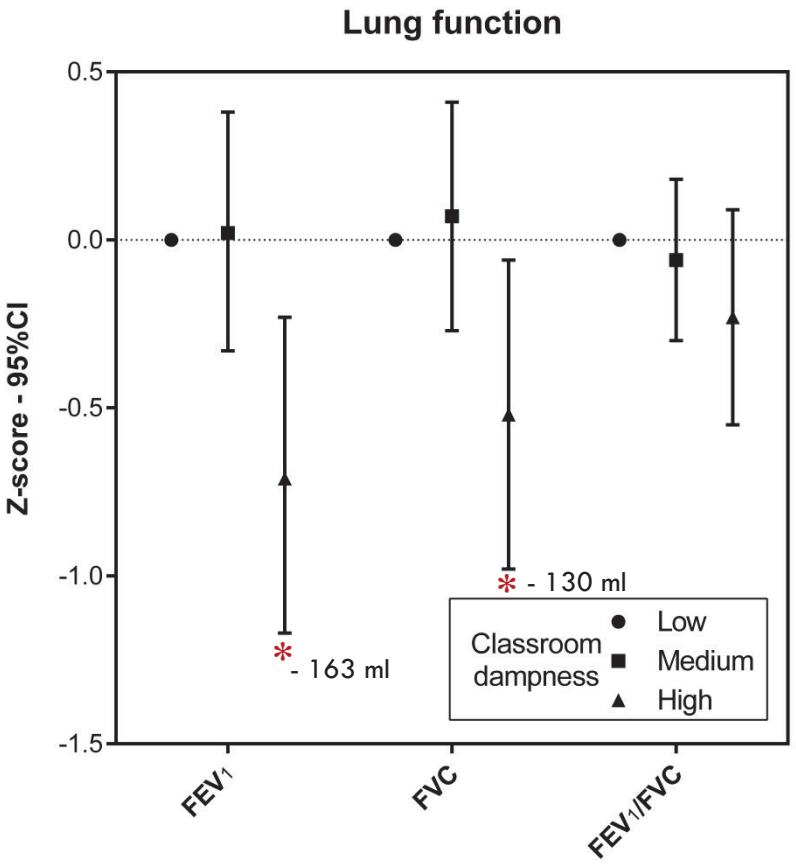
Dampness-related health effects



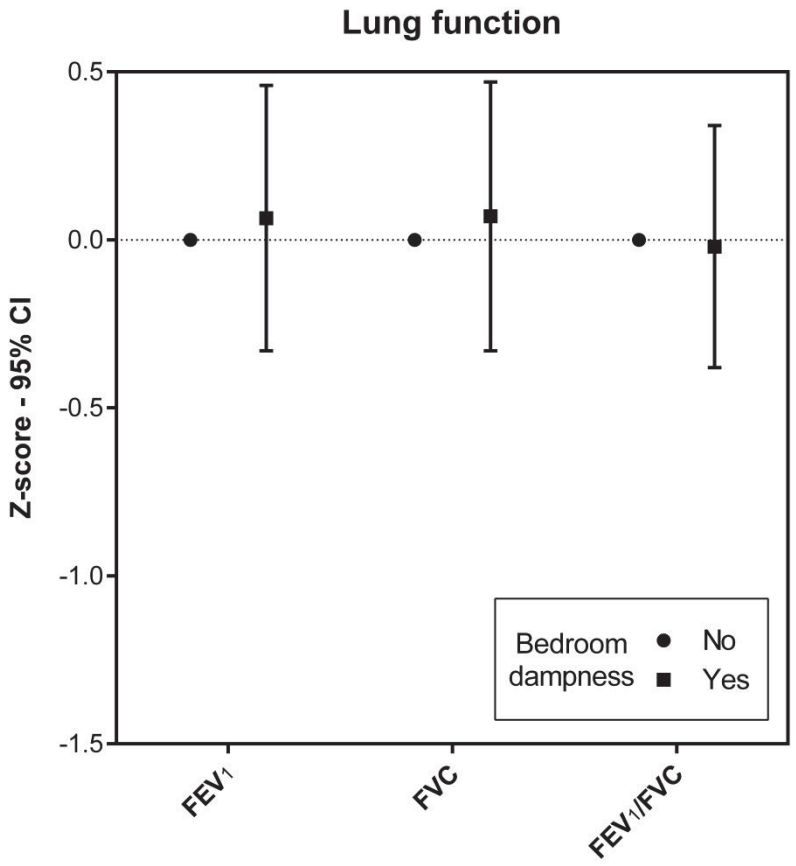
Adjusted for: gender, second-hand smoking at home, atopy, atopic disposition, and season

Dampness-related health effects

Classroom dampness



Self-reported bedroom dampness

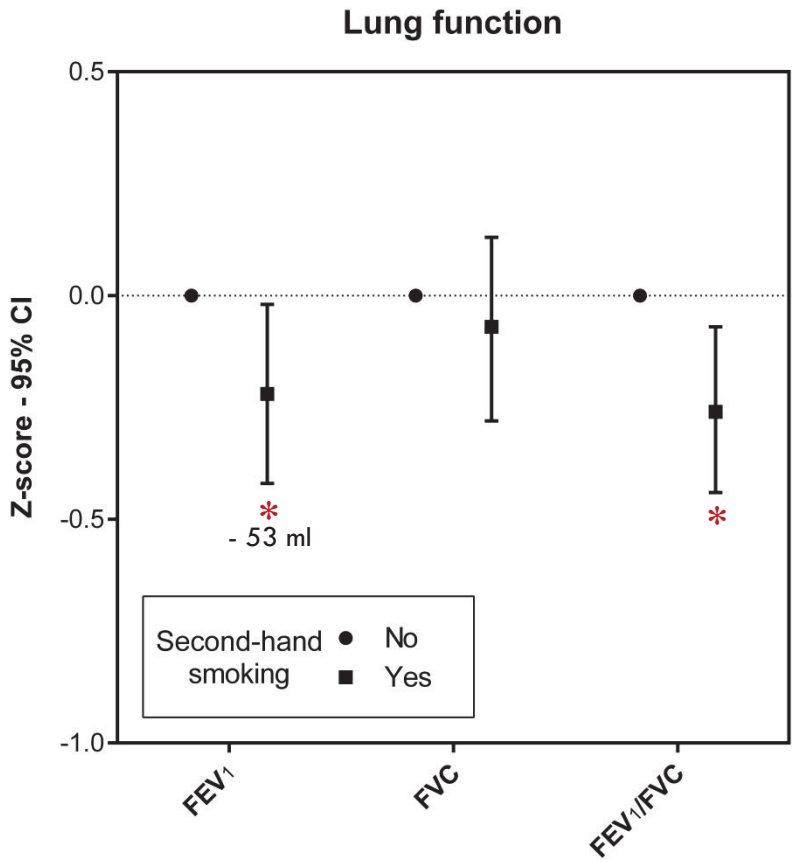


Other indoor factors

Other potential risk factors:

Pet keeping, urbanisation, location of the home, crowding at home, number of pupils in the classroom, air quality parameters (temperature, RH and CO2), and second-hand smoking

Second-hand smoking



Discussion

Strength of our study and results

Advantages:

- Consistent with previous study findings
- Subjective and objective health assessment
- Technician determined classroom dampness

Limitations:

- Cross-sectional design
- Small population
- No knowledge on underlying mechanisms
- Self-reported bedroom dampness and second-hand smoking

Conclusion

Second-hand smoking and dampness may have adverse effects on children's respiratory health and should therefore be prevented by remediation or avoidance

Thank you for listening